

# OBSERVATIONS & RECOMMENDATIONS

After reviewing data collected from **LAKE MASSASECUM** the program coordinators recommend the following actions.

## **FIGURE INTERPRETATION**

- Figure 1: These graphs illustrate concentrations of chlorophyll-a, also a measure of algal abundance, in the water column. Algae are microscopic plants that are a natural part of lake ecosystems. Algae contain chlorophyll-a, a pigment necessary for photosynthesis. A measure of chlorophyll-a can indicate the abundance of algae in a lake. The historical data (the bottom graph) show a *fairly stable* in-lake chlorophyll-a trend. Mean chlorophyll-a concentrations have remained below the NH mean value for over ten years, and show no sign of increasing productivity toward nuisance levels. While algae are present in all lakes, an excess amount of any type is not welcomed. Golden-brown algae and diatoms were common during the summer months. Concentrations can increase when there are external and internal sources of phosphorus, which is the nutrient algae depend upon for growth. It's important to continue the education process and keep residents aware of the sources of phosphorus and how it influences lake quality.
- Figure 2: Water clarity is measured by using a Secchi disk. Clarity, or transparency, can be influenced by such things as algae, sediments from erosion, and natural colors of the water. The graphs on this page show historical and current year data. The lower graph shows a *stable* trend in lake transparency. Transparency in July was higher, and the slight drop in algal concentrations was likely the cause. June transparency was slightly low and the rainy spring and pollen likely caused the clarity of the water to decrease. Transparency continues to exceed the state average. The 2000 sampling season was considered to be wet and, therefore, average transparency readings are expected to be slightly lower than last year's readings. Higher amounts of rainfall usually cause more eroding of sediments into the lake and streams, thus decreasing clarity.
- Figure 3: These figures show the amounts of phosphorus in the epilimnion (the upper layer in the lake) and the hypolimnion (the lower layer); the inset graphs show current year data. Phosphorus is

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## **2000**

the limiting nutrient for plants and algae in New Hampshire waters. Too much phosphorus in a lake can lead to increases in plant growth over time. These graphs show a *stable* trend in the upper water layer, and a *slightly improving* trend in the lower water layer. Phosphorus values remained average for the lake and were fairly uniform throughout the season. One of the most important approaches to reducing phosphorus levels is educating the public. Humans introduce phosphorus to lakes by several means: fertilizing lawns, septic system failures, and detergents containing phosphates are just a few. Keeping the public aware of ways to reduce the input of phosphorus to lakes means less productivity in the lake. Contact the VLAP coordinator for tips on educating your lake residents or for ideas on testing your watershed for phosphorus inputs.

### **OTHER COMMENTS**

- In the fall of 1999 and 2000, small amounts of the blue-green algae *Anabaena* were observed floating on the surface of the water. Blue-green algae can become nuisance species when sufficient nutrients and favorable environmental conditions are present. While overall algae abundance continues to be low in the lake, the presence of these indicator species should serve as a reminder of the lake's delicate balance. Continued care to protect the watershed by limiting or eliminating fertilizer use on lawns, keeping the lake shoreline natural, and properly maintaining septic systems and roads will keep algae populations in balance.
- **Please note** in July this summer phosphorus concentrations in Colby Bk, Frenches Park Bk, and Melvin Bk Outlet were found to be less than 5 µg/L (Table 8). The NHDES Laboratory Services adopted a new method of analyzing total phosphorus this year and the lowest value that can be recorded is less than 5 µg/L. We would like to remind the association that a reading of 5 µg/L is considered low for New Hampshire's waters. In fact, phosphorus concentrations were lower than last year throughout the watershed.
- Dissolved oxygen was low from the mid-thermocline to the lake bottom this year (Table 9). This is typical of Lake Massasecum in the latter part of the summer (Table 10). The process of decomposition in the sediments depletes dissolved oxygen on the bottom of thermally stratified lakes. As bacteria break down organic matter, they deplete oxygen in the water. When oxygen gets below 1 mg/L, phosphorus normally bound up in the mud may be released into the water column, a process that is referred to as *internal loading*.
- *E. coli* concentrations (Table 12) in Davis Brook were all below the state standard of 406 counts per 100 m/L, and were not elevated to concentrations seen last summer. We did note, however, that cows were seen in Davis Brook upstream of the sampling site this summer.

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**2000**

We suggest continued monitoring of the brook, and also adding upstream testing sites to evaluate the situation. We may also file a complaint with the Department of Agriculture so that proper measures are put in place to prevent the cows from entering the brook.

**NOTES**

- Monitor's Note (6/21/00): Rainy spring, brooks have good flow. Above normal lake level. Pine pollen.
- Monitor's Note (7/24/00): 3 loons frequent lake, also blue heron. Casino Brook low flow, no test. Snapper and painted turtles are back, and more visible this season.
- Monitor's Note (8/15/00): Rt. 114 cows seen in Davis Brook.

**USEFUL RESOURCES**

*The Blue Green Algae*. North American Lake Management Society, 1989. (608) 233-2836 or [www.nalms.org](http://www.nalms.org)

*Vegetated Phosphorus Buffer Strips*, NH Lakes Association pamphlet, (603) 226-0299 or [www.nhlakes.org](http://www.nhlakes.org)

*Septic Systems and Your Lake's Water Quality*, WD-BB-11, NHDES Fact Sheet, (603) 271-3503 or [www.state.nh.us](http://www.state.nh.us)

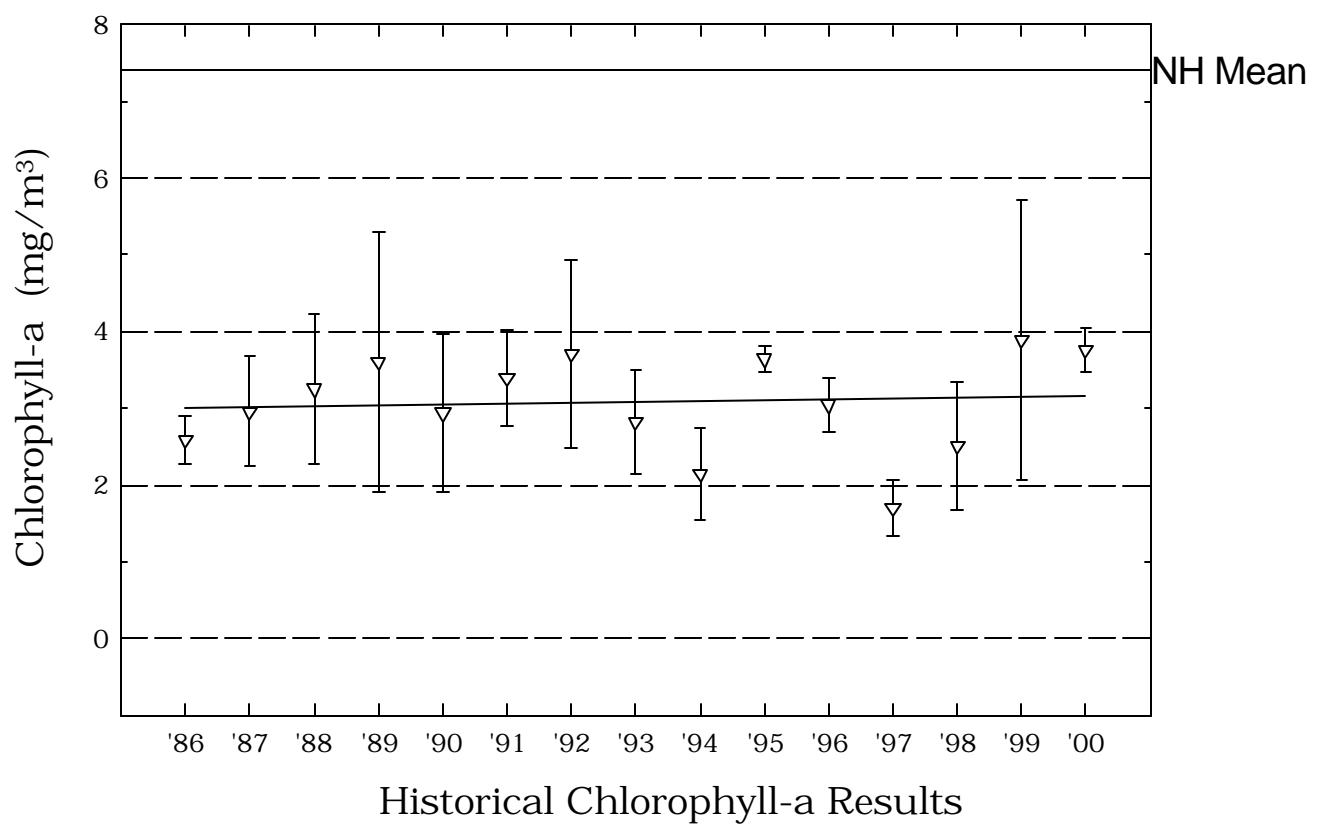
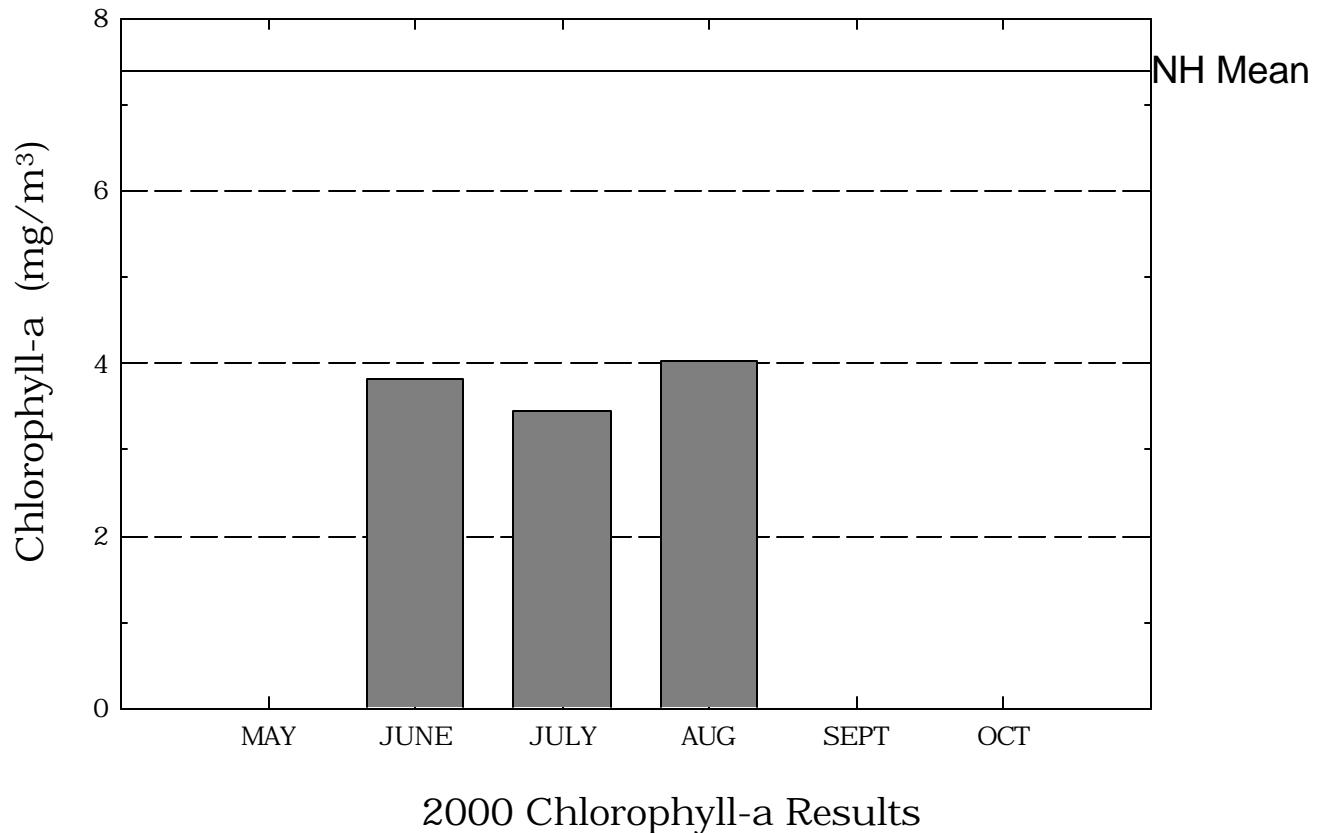
*Answers to Common Lake Questions*, NHDES-WSPCD-92-12, NHDES Booklet, (603) 271-3503.

*A Brief History of Lakes*, NH Lakes Association pamphlet, (603) 226-0299 or [www.nhlakes.org](http://www.nhlakes.org)

*Bacteria in Surface Waters*, WD-BB-14, NHDES Fact Sheet, (603) 271-3503 or [www.state.nh.us](http://www.state.nh.us)

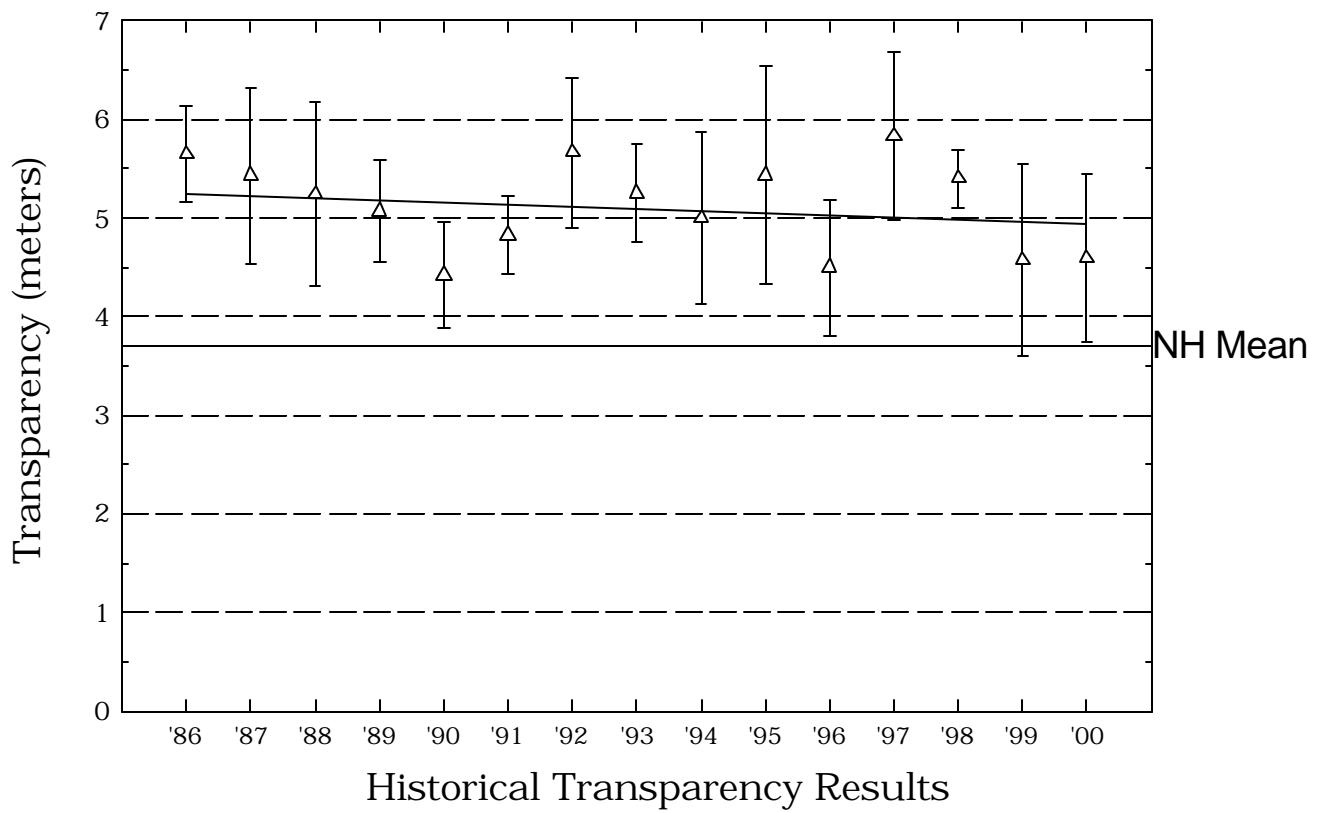
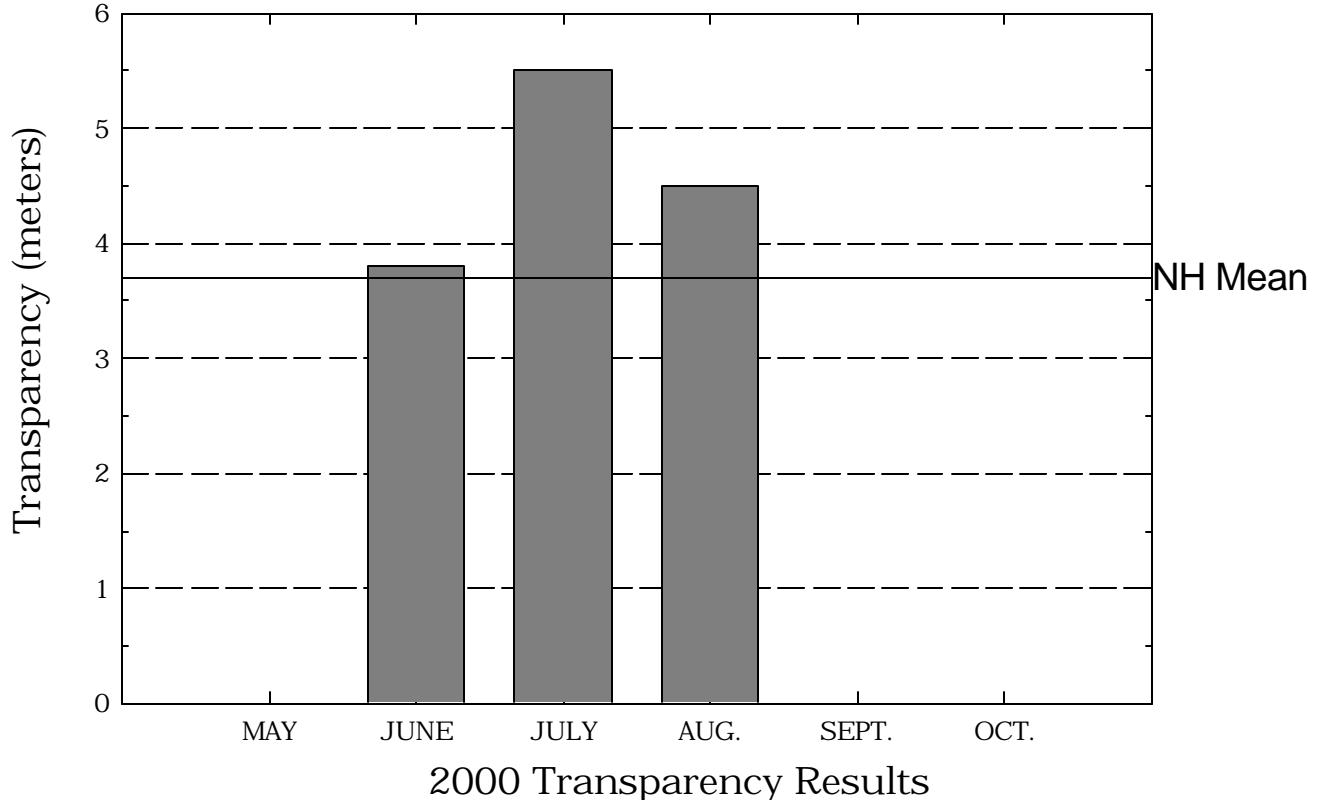
# Lake Massasecum

**Figure 1.** Monthly and Historical Chlorophyll-a Results



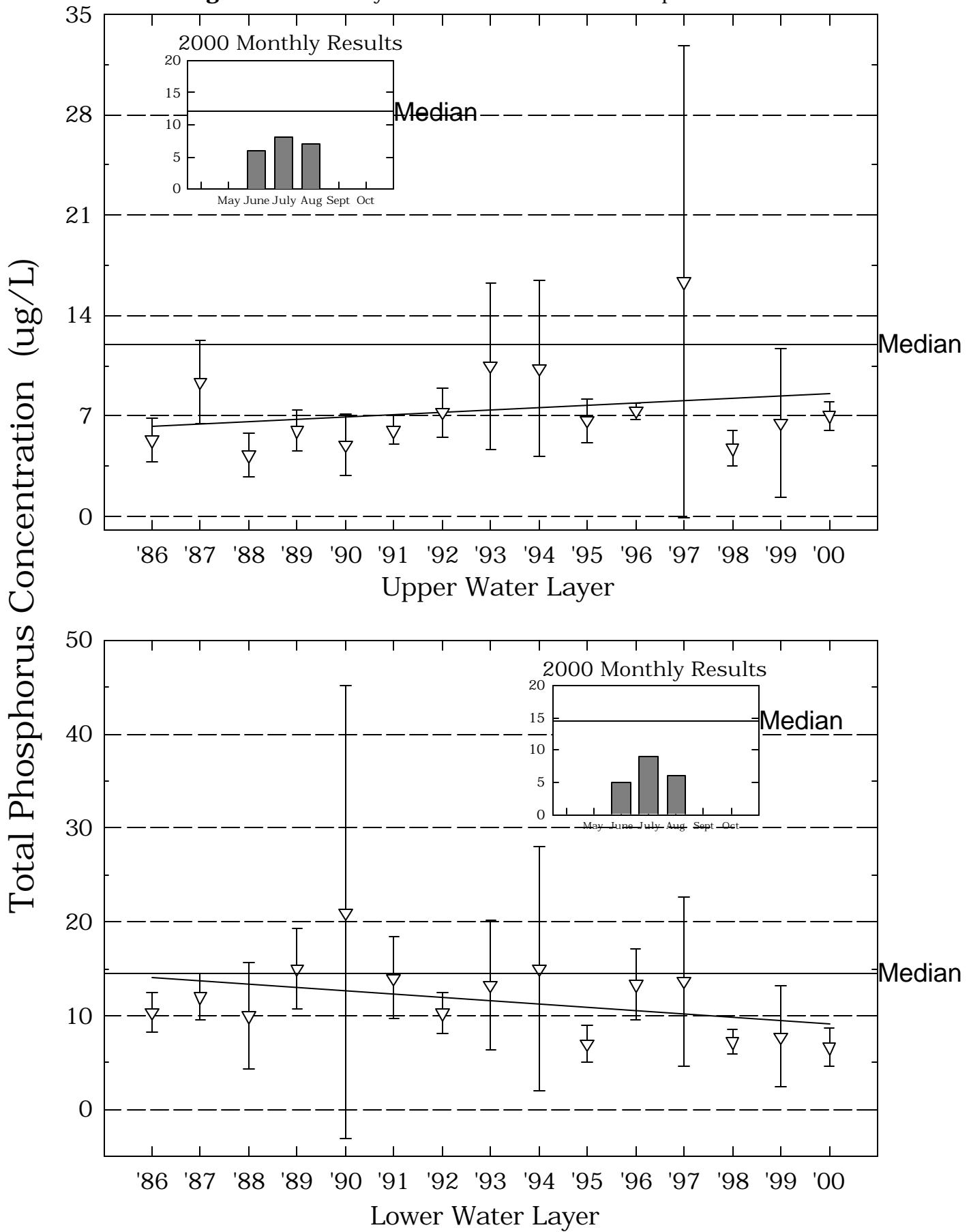
# Lake Massasecum

**Figure 2.** Monthly and Historical Transparency Results



# Lake Massasecum

**Figure 3.** Monthly and Historical Total Phosphorus Data.



**Table 1.**

**MASSASECUM, LAKE  
BRADFORD**

**Chlorophyll-a results (mg/m<sup>3</sup>) for current year and historical sampling periods.**

<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
1986	2.23	4.08	2.95
1987	2.51	4.05	2.96
1988	2.15	4.30	3.25
1989	2.20	5.49	3.61
1990	2.04	4.22	2.94
1991	2.92	3.84	3.24
1992	2.91	5.12	3.71
1993	2.35	3.84	2.83
1994	1.45	2.58	2.14
1995	3.46	3.82	3.64
1996	2.77	3.44	3.05
1997	1.30	1.99	1.70
1998	2.02	3.48	2.50
1999	2.18	6.23	3.89
2000	3.46	4.03	3.77

**Table 2.**

**MASSASECUM, LAKE  
BRADFORD**

**Phytoplankton species and relative percent abundance.  
Summary for current and historical sampling seasons.**

<b>Date of Sample</b>	<b>Species Observed</b>	<b>Relative % Abundance</b>
07/12/1986	DINOBRYON ASTERIONELLA	46 25
08/06/1986	CHRYSOSPHAERELLA DINOBRYON	69 14
06/30/1987	DINOBRYON ASTERIONELLA	57 16
07/23/1987	DINOBRYON CHRYSOSPHAERELLA TABELLARIA	58 21 17
03/03/1988	ASTERIONELLA	81
06/23/1988	ASTERIONELLA CHRYSOSPHAERELLA	55 36
08/10/1989	CHRYSOSPHAERELLA DINOBRYON	68 22
08/02/1990	CHRYSOSPHAERELLA TABELLARIA	78 17
08/13/1991	DINOBRYON MELOSIRA TABELLARIA	63 10 11
06/27/1992	CHRYSOSPHAERELLA DINOBRYON ASTERIONELLA	47 31 16
06/07/1993	ASTERIONELLA	80

**Table 2.**

**MASSASECUM, LAKE  
BRADFORD**

**Phytoplankton species and relative percent abundance.  
Summary for current and historical sampling seasons.**

<b>Date of Sample</b>	<b>Species Observed</b>	<b>Relative % Abundance</b>
07/12/1994	DINOBRYON SYNURA MALLOMONAS	37 25 23
06/26/1995	DINOBRYON ANABAENA ASTERIONELLA	49 20 19
07/16/1996	DINOBRYON ASTERIONELLA RHIZOSOLENIA	78 8 8
06/27/1997	DINOBRYON TABELLARIA MELOSIRA	52 14 14
06/02/1998	ASTERIONELLA DINOBRYON TABELLARIA	35 35 121
08/10/1999	SYNURA CHRYSSOPHAERELLA TABELLARIA	60 22 9
08/15/2000	CHRYSSOPHAERELLA RHIZOSOLENIA ASTERIONELLA	27 26 22

**Table 3.**

**MASSASECUM, LAKE**

**BRADFORD**

**Summary of current and historical Secchi Disk  
transparency results (in meters).**

<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
1986	5.3	6.0	5.5
1987	4.4	6.0	5.4
1988	3.8	6.0	5.2
1989	4.5	5.5	5.0
1990	3.7	5.0	4.4
1991	4.2	5.3	4.7
1992	5.0	6.5	5.6
1993	5.0	6.0	5.2
1994	4.0	5.5	5.0
1995	4.3	6.5	5.4
1996	4.1	5.3	4.5
1997	5.2	6.8	5.8
1998	5.0	5.7	5.4
1999	3.5	5.5	4.5
2000	3.8	5.5	4.6

**Table 4.****MASSASECUM, LAKE****BRADFORD**

**pH summary for current and historical sampling seasons.  
Values in units, listed by station and year.**

<b>Station</b>	<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
BABCOCK BK				
	1986	6.52	6.76	6.64
	1987	6.33	6.79	6.42
	1988	6.37	6.58	6.52
	1989	6.72	6.78	6.75
	1990	6.42	6.80	6.62
	1991	6.70	6.80	6.76
	1992	6.36	6.85	6.57
	1993	6.62	7.03	6.78
	1994	6.61	6.68	6.63
	1995	6.56	6.80	6.67
	1996	6.10	6.65	6.35
	1997	6.46	6.71	6.59
	1998	6.45	6.67	6.58
	1999	6.25	6.68	6.49
	2000	6.62	6.63	6.63
CASINO BK				
	1986	5.73	6.02	5.88
	1987	5.85	6.09	5.93
	1988	5.79	6.01	5.88
	1989	5.48	5.84	5.67
	1990	5.74	5.76	5.75
	1991	5.94	6.70	6.26
	1992	5.81	6.01	5.90
	1993	5.79	6.82	6.12

**Table 4.****MASSASECUM, LAKE****BRADFORD**

**pH summary for current and historical sampling seasons.  
Values in units, listed by station and year.**

<b>Station</b>	<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
	1994	5.81	5.97	5.87
	1995	5.75	6.33	5.95
	1996	5.76	5.78	5.77
	1997	6.03	6.32	6.13
	1999	5.44	6.12	5.66
	2000	6.17	6.94	6.40

**COLBY BK**

	1986	6.73	7.03	6.83
	1987	6.54	6.80	6.65
	1988	6.39	6.65	6.55
	1989	5.73	6.92	6.15
	1990	6.06	6.95	6.44
	1991	6.80	7.00	6.89
	1992	6.35	6.91	6.59
	1993	6.63	6.84	6.74
	1994	6.81	6.95	6.89
	1995	6.53	6.88	6.71
	1996	6.07	6.69	6.36
	1997	6.66	6.79	6.74
	1998	6.70	6.88	6.80
	1999	6.22	6.70	6.48
	2000	6.74	6.86	6.81

**DAVIS BK #1**

	1997	6.08	6.08
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**Table 4.****MASSASECUM, LAKE****BRADFORD**

**pH summary for current and historical sampling seasons.  
Values in units, listed by station and year.**

<b>Station</b>	<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
DAVIS BK #2	1997	6.09	6.09	6.09
DAVIS BK				
	1986	5.25	6.63	5.78
	1987	5.61	6.65	5.97
	1988	5.68	6.50	6.09
	1989	6.07	6.55	6.24
	1990	5.74	6.16	5.98
	1991	6.10	6.20	6.14
	1992	5.94	6.10	6.02
	1993	6.00	6.31	6.08
	1994	5.96	6.08	6.00
	1995	5.97	6.30	6.14
	1996	5.63	6.32	5.87
	1997	6.10	6.10	6.10
	1998	5.76	6.20	5.97
	1999	5.12	6.29	5.61
	2000	5.97	5.99	5.98
EPILIMNION				
	1986	6.62	6.67	6.63
	1987	6.46	6.64	6.53
	1988	6.03	6.78	6.42
	1989	6.74	6.91	6.79
	1990	6.13	6.94	6.48
	1991	6.66	6.80	6.72

**Table 4.****MASSASECUM, LAKE****BRADFORD**

**pH summary for current and historical sampling seasons.  
Values in units, listed by station and year.**

<b>Station</b>	<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
<b>EPILIMNION</b>				
	1992	6.48	6.92	6.67
	1993	5.99	6.90	6.39
	1994	6.50	6.73	6.64
	1995	6.58	6.81	6.70
	1996	6.24	6.46	6.34
	1997	6.41	6.66	6.54
	1998	6.62	6.76	6.67
	1999	6.27	6.54	6.41
	2000	6.59	6.75	6.69
<b>FRENCHES PARK BK</b>				
	1986	6.60	6.91	6.74
	1987	6.54	6.89	6.65
	1988	6.43	6.80	6.53
	1989	6.64	6.90	6.71
	1990	6.35	6.75	6.55
	1991	6.70	6.98	6.81
	1992	6.50	6.77	6.61
	1993	6.56	6.92	6.72
	1994	6.57	6.65	6.62
	1995	6.45	6.70	6.56
	1996	6.04	6.53	6.23
	1997	6.47	6.60	6.53
	1998	6.52	6.64	6.57
	1999	6.23	6.68	6.47
	2000	6.57	6.71	6.62

**Table 4.****MASSASECUM, LAKE****BRADFORD**

**pH summary for current and historical sampling seasons.  
Values in units, listed by station and year.**

<b>Station</b>	<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
HOWLETT BK				
	1986	6.42	6.70	6.61
	1987	5.98	6.64	6.33
	1988	6.10	6.69	6.32
	1989	6.48	6.98	6.66
	1990	6.39	6.66	6.53
	1991	6.70	7.00	6.85
	1992	6.35	6.72	6.53
	1993	6.29	6.87	6.49
	1994	6.64	6.87	6.76
	1995	6.70	7.11	6.85
	1996	6.21	6.84	6.44
	1997	6.84	7.01	6.89
	1998	6.65	6.95	6.78
	1999	6.23	7.06	6.62
	2000	6.72	6.95	6.81
HYPOLIMNION				
	1986	5.93	6.52	6.07
	1987	5.88	6.72	6.07
	1988	5.59	6.30	5.90
	1989	5.99	6.25	6.12
	1990	5.92	6.43	6.19
	1991	6.01	6.69	6.21
	1992	6.02	6.78	6.19
	1993	5.97	6.62	6.11

**Table 4.****MASSASECUM, LAKE****BRADFORD**

**pH summary for current and historical sampling seasons.  
Values in units, listed by station and year.**

<b>Station</b>	<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
	1994	5.92	6.41	6.11
	1995	5.99	6.63	6.23
	1996	5.73	6.22	5.91
	1997	5.80	6.14	5.92
	1998	5.88	6.11	6.00
	1999	6.00	6.23	6.09
	2000	5.98	6.19	6.06

**MELVIN BK OUTLET**

	1986	6.50	6.68	6.56
	1987	6.35	6.65	6.48
	1988	6.25	6.56	6.39
	1989	6.07	6.60	6.31
	1990	6.24	6.67	6.46
	1991	6.60	6.65	6.62
	1992	5.94	6.66	6.25
	1993	6.49	6.79	6.57
	1994	6.37	6.60	6.46
	1995	6.47	6.79	6.64
	1996	6.23	6.36	6.28
	1997	6.42	6.64	6.51
	1998	6.44	6.60	6.49
	1999	6.10	6.74	6.44
	2000	6.50	6.52	6.51

**METALIMNION**

	1986	6.04	6.60	6.16
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**Table 4.****MASSASECUM, LAKE****BRADFORD**

**pH summary for current and historical sampling seasons.  
Values in units, listed by station and year.**

<b>Station</b>	<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
	1987	6.05	6.47	6.16
	1988	5.91	6.43	6.23
	1989	6.03	6.64	6.19
	1990	6.15	6.31	6.24
	1991	6.40	6.79	6.53
	1992	6.27	6.74	6.40
	1993	6.42	6.72	6.55
	1994	6.16	6.62	6.27
	1995	6.12	6.54	6.33
	1996	5.84	6.44	6.05
	1997	6.04	6.65	6.27
	1998	5.74	6.29	6.00
	1999	5.86	6.15	6.03
	2000	5.96	6.13	6.04
MT INN BK				
	1998	5.84	6.15	5.98
	1999	5.57	6.40	5.88
	2000	6.00	6.25	6.13

**Table 5.**

**MASSASECUM, LAKE**  
**BRADFORD**

**Summary of current and historical Acid Neutralizing Capacity.**  
**Values expressed in mg/L as CaCO .**

**Epilimnetic Values**

<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
1986	2.90	3.00	2.97
1987	2.70	2.80	2.75
1988	3.00	4.30	3.68
1989	3.20	3.70	3.40
1990	2.90	3.10	3.00
1991	2.90	3.10	3.00
1992	3.40	3.70	3.55
1993	2.50	4.80	3.58
1994	3.20	3.30	3.23
1995	2.70	3.80	3.20
1996	3.10	3.40	3.23
1997	2.60	3.30	2.93
1998	2.70	3.30	3.03
1999	3.30	3.80	3.45
2000	2.90	3.40	3.20

**Table 6.**

**MASSASECUM, LAKE  
BRADFORD**

**Specific conductance results from current and historic  
sampling seasons. Results in uMhos/cm.**

<b>Station</b>	<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
BABCOCK BK				
	1986	29.9	38.9	34.8
	1987	25.9	44.2	31.5
	1988	24.7	39.3	34.8
	1989	27.2	42.4	35.4
	1990	25.8	35.8	31.3
	1991	40.8	44.7	42.4
	1992	29.2	36.5	33.2
	1993	30.2	46.4	40.3
	1994	31.9	38.5	35.4
	1995	36.7	40.4	38.0
	1996	24.3	37.9	30.2
	1997	33.5	36.6	34.9
	1998	24.3	38.7	33.0
	1999	28.6	40.2	35.1
	2000	27.8	34.1	30.9
CASINO BK				
	1986	105.6	185.6	141.1
	1987	89.2	201.4	141.2
	1988	88.4	176.4	149.7
	1989	92.4	209.8	162.0
	1990	105.8	132.6	119.2
	1991	39.6	174.7	90.1
	1992	87.6	139.3	119.2
	1993	44.1	249.0	119.7

**Table 6.**

**MASSASECUM, LAKE  
BRADFORD**

**Specific conductance results from current and historic  
sampling seasons. Results in uMhos/cm.**

<b>Station</b>	<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
	1994	146.9	212.2	173.1
	1995	169.7	170.2	169.9
	1996	52.9	268.0	152.6
	1997	202.0	229.0	213.6
	1999	153.4	180.0	166.7
	2000	173.9	187.7	180.8
COLBY BK				
	1986	20.6	31.7	28.7
	1987	27.0	33.9	30.0
	1988	26.3	42.4	33.4
	1989	30.7	58.2	39.9
	1990	31.1	35.3	32.9
	1991	32.9	33.7	33.3
	1992	27.8	30.1	29.2
	1993	26.6	34.7	31.8
	1994	27.6	33.1	30.4
	1995	31.3	35.6	33.3
	1996	23.2	34.0	28.1
	1997	28.9	32.5	30.1
	1998	23.7	30.3	27.7
	1999	29.3	32.5	31.3
	2000	26.4	29.0	27.8
DAVIS BK #1				
	1997	85.3	85.3	85.3

**Table 6.**

**MASSASECUM, LAKE  
BRADFORD**

**Specific conductance results from current and historic  
sampling seasons. Results in uMhos/cm.**

<b>Station</b>	<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
DAVIS BK #2				
	1997	85.3	85.3	85.3
DAVIS BK #3				
	1999	131.4	131.4	131.4
DAVIS BK				
	1986	52.1	77.8	66.0
	1987	41.2	83.3	61.1
	1988	43.5	89.5	75.3
	1989	27.6	83.1	63.0
	1990	50.0	78.0	65.1
	1991	68.7	74.4	72.4
	1992	61.1	75.5	66.0
	1993	63.1	89.4	81.1
	1994	55.2	66.1	62.1
	1995	70.4	106.8	86.1
	1996	36.3	85.3	63.9
	1997	78.3	80.3	79.3
	1998	48.0	92.1	72.6
	1999	26.2	109.2	69.5
	2000	62.1	67.9	65.2
EPILIMNION				
	1986	39.5	41.0	40.1
	1987	34.4	36.1	35.2
	1988	36.2	40.6	37.7
	1989	39.2	40.6	40.0

**Table 6.**

**MASSASECUM, LAKE  
BRADFORD**

**Specific conductance results from current and historic  
sampling seasons. Results in uMhos/cm.**

<b>Station</b>	<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
	1990	35.7	38.6	37.1
	1991	35.9	37.1	36.6
	1992	37.8	40.0	38.8
	1993	38.5	41.1	40.3
	1994	38.0	40.4	39.4
	1995	25.3	38.8	34.3
	1996	25.3	36.5	32.5
	1997	33.8	36.0	35.0
	1998	34.5	36.9	35.3
	1999	41.4	43.5	42.6
	2000	40.3	40.8	40.5
FRENCHES PARK BK				
	1986	56.8	133.7	89.7
	1987	56.7	156.8	92.9
	1988	67.1	191.8	111.7
	1989	55.9	104.0	84.1
	1990	66.4	187.0	103.8
	1991	116.8	157.7	139.6
	1992	57.3	142.7	86.3
	1993	62.4	286.0	161.7
	1994	75.3	94.6	86.5
	1995	78.4	191.5	125.0
	1996	44.0	120.4	76.0
	1997	128.9	203.0	172.1
	1998	56.7	160.2	111.6

**Table 6.**

**MASSASECUM, LAKE  
BRADFORD**

**Specific conductance results from current and historic  
sampling seasons. Results in uMhos/cm.**

<b>Station</b>	<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
	1999	72.5	291.9	165.1
	2000	69.9	102.1	81.6
<b>HOWLETT BK</b>				
	1986	28.2	53.8	36.7
	1987	29.8	55.8	41.8
	1988	41.0	114.4	58.0
	1989	31.6	54.6	43.6
	1990	32.6	54.5	41.7
	1991	39.9	51.1	44.8
	1992	33.6	42.2	38.9
	1993	38.0	61.4	52.0
	1994	30.5	36.7	33.0
	1995	41.3	48.6	44.5
	1996	22.3	51.0	34.9
	1997	37.9	45.3	42.5
	1998	22.8	50.7	39.3
	1999	33.8	49.6	43.0
	2000	27.6	36.0	31.7
<b>HYPOLIMNION</b>				
	1986	40.4	44.0	42.0
	1987	33.9	36.5	35.0
	1988	34.5	42.7	37.4
	1989	40.6	45.3	42.9
	1990	38.0	49.1	42.6
	1991	36.1	43.5	39.5

**Table 6.**

**MASSASECUM, LAKE  
BRADFORD**

**Specific conductance results from current and historic  
sampling seasons. Results in uMhos/cm.**

<b>Station</b>	<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
	1992	38.0	40.3	39.5
	1993	38.1	41.8	40.3
	1994	37.6	40.9	39.7
	1995	39.1	43.7	41.0
	1996	35.3	38.9	37.3
	1997	33.2	39.6	35.7
	1998	37.1	43.8	39.7
	1999	41.5	53.1	44.8
	2000	41.6	46.8	44.0
MELVIN BK OUTLET				
	1986	39.9	43.4	40.9
	1987	25.9	37.6	34.2
	1988	35.4	39.8	37.6
	1989	41.1	51.4	45.8
	1990	33.9	40.8	38.0
	1991	37.1	54.4	44.7
	1992	38.7	40.4	39.7
	1993	38.9	64.3	48.9
	1994	40.9	45.4	42.7
	1995	39.9	70.5	50.6
	1996	36.1	38.6	36.9
	1997	37.2	57.5	43.9
	1998	35.5	39.0	37.0
	1999	42.0	49.8	45.4
	2000	40.6	41.5	41.1

**Table 6.**

**MASSASECUM, LAKE  
BRADFORD**

**Specific conductance results from current and historic  
sampling seasons. Results in uMhos/cm.**

<b>Station</b>	<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
METALIMNION				
	1986	39.6	41.1	40.7
	1987	32.3	35.2	34.0
	1988	34.4	38.1	36.0
	1989	38.6	40.1	39.5
	1990	36.4	38.5	37.3
	1991	36.3	37.6	36.8
	1992	36.7	39.6	38.4
	1993	38.4	42.2	40.4
	1994	38.1	40.5	39.3
	1995	38.3	39.6	38.8
	1996	32.7	36.7	34.9
	1997	32.6	35.8	34.6
	1998	32.9	36.7	34.8
	1999	40.6	43.3	42.0
	2000	40.0	41.8	41.0
MT INN BK				
	1998	30.1	40.4	34.3
	1999	32.2	43.1	36.3
	2000	27.7	39.5	31.9

**Table 8.**

**MASSASECUM, LAKE  
BRADFORD**

**Summary historical and current sampling season Total  
Phosphorus data. Results in ug/L.**

<b>Station</b>	<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
BABCOCK BK				
	1986	3	22	11
	1987	5	17	13
	1988	2	18	10
	1989	6	17	10
	1990	5	18	9
	1991	11	12	11
	1992	8	10	8
	1993	12	48	27
	1994	5	26	17
	1995	8	14	10
	1996	12	31	18
	1997	9	13	11
	1998	5	11	8
	1999	8	15	11
	2000	5	7	6
CASINO BK				
	1986	3	143	42
	1987	4	28	13
	1988	< 1	31	14
	1989	8	11	9
	1990	1	10	5
	1991	10	36	19
	1992	6	17	11
	1993	12	28	18

**Table 8.**

**MASSASECUM, LAKE  
BRADFORD**

**Summary historical and current sampling season Total  
Phosphorus data. Results in ug/L.**

<b>Station</b>	<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
	1994	14	24	17
	1995	16	18	17
	1996	11	25	18
	1997	38	42	40
	1999	8	14	11
	2000	6	11	8
COLBY BK				
	1986	1	26	12
	1987	2	14	8
	1988	3	9	6
	1989	8	35	17
	1990	3	26	12
	1991	8	14	10
	1992	7	11	8
	1993	8	31	14
	1994	13	20	15
	1995	8	19	12
	1996	10	23	15
	1997	8	11	9
	1998	3	13	8
	1999	7	17	12
	2000	< 5	8	6
DAVIS BK #1				
	1997	25	25	25

**Table 8.**

**MASSASECUM, LAKE  
BRADFORD**

**Summary historical and current sampling season Total  
Phosphorus data. Results in ug/L.**

<b>Station</b>	<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
DAVIS BK #2	1997	24	24	24
DAVIS BK				
	1986	18	77	36
	1987	8	40	23
	1988	12	40	21
	1989	11	30	20
	1990	11	28	21
	1991	25	27	26
	1992	21	78	36
	1993	12	33	23
	1994	22	43	29
	1995	16	24	20
	1996	16	37	25
	1997	16	22	19
	1998	11	21	15
	1999	13	23	18
	2000	9	19	14
EPILIMNION				
	1986	4	7	5
	1987	6	11	9
	1988	3	6	4
	1989	5	7	5
	1990	2	7	5
	1991	5	7	6

**Table 8.**

**MASSASECUM, LAKE  
BRADFORD**

**Summary historical and current sampling season Total  
Phosphorus data. Results in ug/L.**

<b>Station</b>	<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
	1992	5	9	7
	1993	5	18	10
	1994	5	17	10
	1995	5	8	6
	1996	7	8	7
	1997	4	35	16
	1998	3	6	4
	1999	1	13	6
	2000	6	8	7
FRENCHES PARK BK				
	1986	1	10	5
	1987	4	11	7
	1988	< 1	11	6
	1989	6	30	15
	1990	1	13	8
	1991	6	10	8
	1992	4	15	9
	1993	8	11	9
	1994	2	15	10
	1995	4	12	8
	1996	7	20	11
	1997	7	44	19
	1998	1	7	4
	1999	4	9	6
	2000	< 5	5	5

**Table 8.**

**MASSASECUM, LAKE  
BRADFORD**

**Summary historical and current sampling season Total  
Phosphorus data. Results in ug/L.**

<b>Station</b>	<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
HOWLETT BK				
	1986	2	37	16
	1987	6	48	23
	1988	6	37	18
	1989	11	21	17
	1990	3	24	13
	1991	9	29	19
	1992	9	23	16
	1993	8	16	11
	1994	16	34	27
	1995	8	20	14
	1996	5	14	10
	1997	10	76	34
	1998	2	12	7
	1999	7	18	13
	2000	5	10	7
HYPOLIMNION				
	1986	8	12	10
	1987	9	15	12
	1988	2	18	8
	1989	12	18	14
	1990	6	57	19
	1991	11	19	14
	1992	8	13	10
	1993	7	23	13

**Table 8.**

**MASSASECUM, LAKE  
BRADFORD**

**Summary historical and current sampling season Total  
Phosphorus data. Results in ug/L.**

<b>Station</b>	<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
	1994	7	30	15
	1995	5	9	7
	1996	9	16	13
	1997	5	23	13
	1998	6	9	7
	1999	1	13	7
	2000	5	9	6
MELVIN BK OUTLET				
	1986	1	11	5
	1987	5	44	16
	1988	1	8	5
	1989	8	13	10
	1990	5	15	8
	1991	6	13	9
	1992	5	11	8
	1993	5	10	7
	1994	4	39	17
	1995	3	12	7
	1996	7	22	12
	1997	6	18	11
	1998	3	18	9
	1999	2	11	8
	2000	< 5	7	5

**Table 8.**

**MASSASECUM, LAKE  
BRADFORD**

**Summary historical and current sampling season Total  
Phosphorus data. Results in ug/L.**

<b>Station</b>	<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
METALIMNION				
	1986	4	13	6
	1987	6	15	10
	1988	5	17	10
	1989	9	10	9
	1990	7	10	8
	1991	7	9	7
	1992	5	10	8
	1993	6	9	7
	1994	7	16	12
	1995	6	14	9
	1996	8	16	11
	1997	5	31	17
	1998	3	9	6
	1999	5	7	6
	2000	6	8	7
MT INN BK				
	1998	10	33	22
	1999	19	67	35
	2000	5	15	11

**Table 9.**  
**MASSASECUM, LAKE**  
**BRADFORD**

**Current year dissolved oxygen and temperature data.**

<b>Depth (meters)</b>	<b>Temperature (celsius)</b>	<b>Dissolved Oxygen (mg/L)</b>	<b>Saturation (%)</b>
<b>August 15, 2000</b>			
0.1	22.8	7.8	90.8
1.0	22.7	7.9	91.6
2.0	22.7	7.6	87.6
3.0	22.7	7.5	86.7
4.0	22.5	7.3	84.5
5.0	22.4	7.2	82.7
6.0	20.8	4.2	47.0
7.0	18.4	1.5	16.4
8.0	14.9	0.4	3.8
9.0	12.8	0.4	3.8
10.0	11.9	0.4	4.1
11.0	11.2	0.5	4.3
12.0	10.3	0.5	4.8
13.0	10.0	0.6	5.4
14.0	9.9	0.8	6.9
15.0	9.8	0.9	8.2
15.5	9.8	1.1	9.8

**Table 10.****MASSASECUM, LAKE****BRADFORD****Historic Hypolimnetic dissolved oxygen and temperature data.**

<b>Date</b>	<b>Depth (meters)</b>	<b>Temperature (celsius)</b>	<b>Dissolved Oxygen (mg/L)</b>	<b>Saturation (%)</b>
July 12, 1986	15.0	10.0	1.0	9.0
June 30, 1987	16.0	7.0	0.7	6.0
July 23, 1987	14.5	8.8	0.8	7.0
March 3, 1988	12.5	3.8	9.0	67.0
June 23, 1988	14.0	8.5	1.1	9.0
July 18, 1988	12.0	10.0	2.9	25.0
October 10, 1989	15.5	11.1	-0.5	-3.0
August 2, 1990	13.0	8.5	0.0	0.0
July 2, 1991	15.0	10.0	0.6	5.3
July 16, 1991	14.0	10.0	0.1	0.9
August 2, 1991	15.0	9.8	0.0	0.0
August 13, 1991	12.0	9.0	0.0	0.0
August 27, 1991	15.0	9.2	0.0	0.0
September 10, 1991	14.0	10.0	0.0	0.0
June 27, 1992	16.0	8.0	0.2	1.7
July 23, 1992	14.0	7.8	0.2	1.7
June 7, 1993	10.5	8.4	7.3	61.0
July 12, 1994	15.0	10.7	0.6	5.0
June 26, 1995	15.0	9.1	1.5	13.0
July 16, 1996	16.0	11.0	0.3	2.0
July 1, 1997	13.5	12.1	1.1	10.0
June 2, 1998	14.0	8.5	5.4	45.0
August 10, 1999	15.0	10.3	1.1	10.0
August 15, 2000	15.5	9.8	1.1	9.8

**Table 11.**

**MASSASECUM, LAKE  
BRADFORD**

**Summary of current year and historic turbidity sampling.  
Results in NTU's.**

<b>Station</b>	<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
BABCOCK BK				
	1997	0.3	0.5	0.4
	1998	0.2	1.1	0.4
	1999	0.1	0.7	0.4
	2000	0.2	0.2	0.2
CASINO BK				
	1997	1.4	3.8	2.8
	1999	0.3	0.7	0.5
	2000	0.2	0.6	0.4
COLBY BK				
	1997	0.1	0.3	0.2
	1998	0.2	1.1	0.5
	1999	0.3	0.7	0.5
	2000	0.1	0.2	0.2
DAVIS BK #1				
	1997	1.5	1.5	1.5
DAVIS BK #2				
	1997	1.5	1.5	1.5
DAVIS BK				
	1997	0.6	0.6	0.6
	1998	0.4	1.3	0.9
	1999	0.6	1.5	1.0
	2000	0.5	0.6	0.5
EPILIMNION				
	1997	0.2	0.3	0.2

**Table 11.**

**MASSASECUM, LAKE  
BRADFORD**

**Summary of current year and historic turbidity sampling.  
Results in NTU's.**

<b>Station</b>	<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
	1998	0.2	0.7	0.4
	1999	0.3	0.7	0.4
	2000	0.2	0.4	0.3
FRENCHES PARK BK				
	1997	1.8	5.0	3.6
	1998	0.1	2.1	0.9
	1999	0.2	1.9	1.0
	2000	0.2	0.4	0.3
HOWLETT BK				
	1997	0.1	0.4	0.2
	1998	0.1	0.9	0.5
	1999	0.1	0.7	0.3
	2000	0.2	0.3	0.2
HYPOLIMNION				
	1997	0.8	1.1	1.0
	1998	0.3	2.8	1.4
	1999	0.7	1.8	1.1
	2000	0.6	0.9	0.7
MELVIN BK OUTLET				
	1997	0.3	0.7	0.5
	1998	0.2	1.3	0.6
	1999	0.3	0.6	0.4
	2000	0.3	0.4	0.3
METALIMNION				
	1997	0.2	0.6	0.3
	1998	0.2	0.9	0.6

**Table 11.**

**MASSASECUM, LAKE  
BRADFORD**

**Summary of current year and historic turbidity sampling.  
Results in NTU's.**

<b>Station</b>	<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
METALIMNION				
	1999	0.4	0.9	0.6
	2000	0.4	0.6	0.5
MT INN BK				
	1998	0.5	2.8	1.6
	1999	1.1	2.5	1.7
	2000	0.5	0.8	0.7

**Table 12.**

**MASSASECUM, LAKE  
BRADFORD**

**Summary of current year bacteria sampling.  
Results in counts per 100ml.**

<b>Location</b>	<b>Date</b>	<b>E. Coli</b>
See Note Below		
CASINO BK	August 15	17
CASINO BROOK	June 21	< 10
DAVIS BK #1	June 21	60
	July 24	20
	August 15	40
DAVIS BK #2	June 21	10
	July 24	20
	August 15	40